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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/604,058

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Bomy A. Chen

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EXAMINER

NG, JAMES WAI HEUNG

ART UNIT

PAPER NUMBER

1763

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

01/04/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/604,058

Applicant(s)

CHEN ET AL.

Examiner

James Ng

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 6/24/2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 1-12, 19 and 20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-20 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152:

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-12, drawn to an apparatus, classified in class 588, subclass 1+.
 - II. Claims 13-18, drawn to an apparatus, classified in class 118, subclass 715+.
 - III. Claims 19 and 20, drawn to a method, classified in class 427, subclass 248.1.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions group (I, II) and group III are related as process and apparatus for its practice.

The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another and materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)).

In this case the apparatus as claimed can be used to practice another and materially different process, for example, a distillation.

3. Inventions I and II are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination (AB_{br} – Claim 13+) as claimed does not require the particulars of the subcombination (B_{sp} – Claim 1+) as claimed because the combination does not require a temperature control device. The subcombination has separate utility such as being used for a process other than a plasma process.

The examiner has required restriction between combination and subcombination inventions. Where applicant elects a subcombination, and claims thereto are subsequently found allowable, any claim(s) depending from or otherwise requiring all the limitations of the allowable subcombination will be examined for patentability in accordance with 37 CFR 1.104. See MPEP § 821.04(a). Applicant is advised that if any claim presented in a continuation or divisional application is anticipated by, or includes all the limitations of, a claim that is allowable in the present application, such claim may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application.

4. Because these inventions are independent or distinct for the reasons given above and there would be a serious burden on the examiner if restriction is not required because the inventions have acquired a separate status in the art in view of their different classification, restriction for examination purposes as indicated is proper.

5. During a telephone conversation with Lisa Jaklitsch on November 27, 2006 a provisional election was made without traverse to prosecute the invention of group II, claims 13-18. Affirmation of this election must be made by applicant in replying to this Office Action. Claims 1-12, 19 and 20 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

6. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 13-15 and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohmi et al. (US 6436353 B1) in view of Ishihara et al. (US 6605134 B2). Ohmi teaches:

- i. An integrated circuit plasma processing system (Figure 1, column 4, lines 1-9) comprising: a process chamber (Figure 1, Processing Chamber) for carrying out plasma-enhanced processing on a wafer; and a reclamation system (Figure 1, all components after Back Pump, column 1, lines 6-8, column 4, lines 2-4) including: a first separator (Figure 1, Staged Coolers or Cooling Tubes) receiving plasma-enhanced exhaust from the process chamber, the first separator including a plurality of temperature zones (Figure 1, three Cooling Tubes in series, each operates at a different temperature) each temperature zone including a collection vessel (Figure 1, structure below each Cooling Tube) for collecting material that condenses in the respective temperature zone – in claim 13.
 - ii. A first separator (Figure 1, Staged Coolers or Cooling Tubes), wherein each temperature zone has a lower temperature than a preceding temperature zone (Figure 1, three Cooling Tubes in series, each operates at a lower temperature than the preceding Tube) - claim 14.
- Applicant's claim requirement of "each temperature zone has a lower temperature than a preceding temperature zone" is a claim requirement of intended use in the pending apparatus claim. Further, it has been held that claim language that simply specifies an

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intended use or field of use for the invention generally will not limit the scope of a claim (Walter, 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

- iii. A plasma gas reclamation system (Figure 1, all components after Back Pump, column 1, lines 6-8, column 4, lines 2-4) comprising a chemical reactive separator (Figure 1, Adsorption/Reaction Tube, column 4, lines 28-31) for receiving exhaust prior to the first separator (Figure 1, Staged Coolers or Cooling Tubes) and separating chemically reactive material from the exhaust – claim 18.

Ohmi does not teach:

- i. An integrated circuit plasma processing system comprising: a material processing unit coupled to an outlet of each collection vessel; and a material reuse unit coupled to each material processing unit – in claim 13.
- ii. The apparatus of claim 13, wherein each material processing unit includes: a disposal unit for disposing of unwanted material; a reservoir for holding wanted material; and a directing valve for directing material to one of the disposal unit and the reservoir - as claimed by claim 15.
- iii. The apparatus of claim 13, wherein the material reuse unit includes: a mixing chamber for receiving material from at least one reservoir, the mixing chamber coupled to the

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process chamber; an injector coupled to each reservoir for selectively communicating material from a respective reservoir to the mixing chamber; and a non-reclaimed material supply coupled to the mixing chamber - as claimed by claim 17.

Ishihara teaches a plasma processing apparatus and waste gas reclamation apparatus including:

- i. A material processing unit (See examiner's notations on enclosed printout of Ishihara, Figure 1) coupled to the outlet of a collection vessel (32, Figure 1), and a material reuse unit (See examiner's notations on enclosed printout of Ishihara, Figure 1) coupled to the material processing unit – in claim 13.
- ii. A material processing unit (See examiner's notations on enclosed printout of Ishihara, Figure 1) includes a disposal unit (69, Figure 1) for disposing of unwanted material, a reservoir (48, Figure 1) for holding wanted material, and a directing valve (67, Figure 1) for directing material to one of the disposal unit and the reservoir – claim 15.
- iii. The material reuse unit (See examiner's notations on enclosed printout of Ishihara, Figure 1) includes: a mixing chamber (35, Figure 1) for receiving material from at least one reservoir (48, Figure 1), the mixing chamber (35, Figure 1) coupled to the process chamber (33, Figure 1); an injector (66, Figure 1) coupled to a reservoir (48, Figure 1) for selectively communicating material from a respective reservoir (48, Figure 1) to the mixing chamber (35, Figure 1); and a non-reclaimed material supply (72, Figure 1) coupled to the mixing chamber (35, Figure 1) – claim 17.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add Ishihara's material processing unit and material reuse unit to Ohmi's apparatus.

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Motivation to add Ishihara's material processing unit and material reuse unit to Ohmi's apparatus is for reducing process gas waste as taught by Ishihara ("consumption amount", column 3, lines 38-46).

9. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohmi et al. (US 6436353 B1) and Ishihara et al. (US 6605134 B2) in view of Ha et al. (US 5779863). Ohmi and Ishihara are discussed above. Ishihara further teaches:

- i. A material processing unit (See examiner's notations on enclosed printout of Ishihara, Figure 1), wherein a directing valve (67, Figure 1) directs material to one of the disposal unit (69, Figure 1), the reservoir (48, Figure 1) and the second separator (46, Figure 1) – in claim 16.

Ohmi and Ishihara do not teach:

- i. The apparatus of claim 15, wherein each material processing unit further includes a second separator, the second separator including at least one secondary temperature zone having a temperature different than a respective preceding temperature zone of the first separator, wherein each secondary temperature zone includes a secondary collection vessel for collecting material that condenses in the respective secondary temperature zone – in claim 16.

Ha teaches a semiconductor processing exhaust gas treatment system including:

- i. A material processing unit (all components, Figure 2) further includes a second separator (fractional distillation column, 11, Figure 2), the second separator (fractional distillation column, 11, Figure 2) including at least one secondary temperature zone (column 5, lines 64-67) having a temperature different than a respective preceding temperature zone

(column 5, lines 42-44) of the first separator (fractional distillation column, 4, Figure 2), wherein each secondary temperature zone (column 5, lines 64-67) includes a secondary collection vessel (23, Figure 2) for collecting material that condenses in the respective secondary temperature zone (column 5, lines 64-67) – in claim 16.

Applicant's claim requirement of "at least one secondary temperature zone having a temperature different than a respective preceding temperature zone" is a claim requirement of intended use in the pending apparatus claim. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter, 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add Ha's second separator, and a collection vessel for collecting condensate from the second separator to Ohmi's apparatus.

Motivation to add Ha's second separator is to further purify the product from the first separator and remove remaining impurities, and addition of the collection vessel is to collect separator condensate which can be recycled and combined with the feed stream to control composition, and to dampen out any large fluctuations in the composition or flow of the feed as taught by Ha (column 7, lines 9-18 and 37-42).

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Also, it is well established that the duplication of parts is obvious (In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960) MPEP 2144.04).

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Campbell et al. (US 3617536) – Fractional Distillation

Miller et al. (US 5718807) – Purification Process For Hexafluoroethane Products

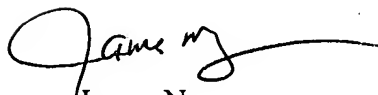
Li et al. (US 6214089) – Perfluorocarbon Recovery

Arno et al. (US 2004/0187683 A1) – Gas Recovery System

Shamouilian et al. (US 2003/0036272 A1) – Recirculation of Cleaning Gas

Sakai et al. (US 2001/0015133 A1) – Gas Recovery System

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner James Ng whose telephone number is (571) 272-7088. The examiner can normally be reached on a Monday through Thursday schedule from 9am through 4:30pm. The official fax phone number for the 1763 art unit is (571) 273-8300. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner cannot be reached please contact the examiner's supervisor, Parviz Hassanzadeh, at (571) 272-1435.


James Ng
Patent Examiner

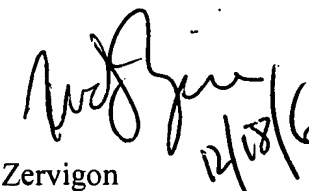

Rudy Zervigon
Primary Patent Examiner
Art Unit 1763

FIG. 1

